

(2) rejected claims 1-6 under 35 USC 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention; and

(3) rejected claims 1-16 under 35 USC 103(a) as being unpatentable over Tayebati in view of Blomberg et al.

In response to Item 1 above, Applicants respectfully traverse the objection to the drawings under 37 CFI 1.83(a). Applicants assert that the drawings show every feature of the invention specified in the claims.

Referring to claims 1 and 4, the feature of the top and bottom electrodes being further apart than the top and bottom mirror is shown in Figs. 12-14, 16 and 18.

Referring to claims 2 and 5, the feature of the top electrode being further from the substrate than the top mirror from the substrate is shown in Fig. 12.

Referring to claims 3 and 6, the feature of the top surface of the bottom mirror being located further from the substrate than the top surface of the bottom electrode is shown in Figs. 13, 14 and 18.

Accordingly, the drawings are believed to be allowable.

In response to Item 2 above, Applicants respectfully traverse the rejection of claims 1-6 under 35 USC 112, first paragraph. Applicants assert that the limitations of claims 1-6 are supported in the specification.

Referring to claims 1 and 4, the limitation of the top and bottom electrodes being further apart than the top and bottom mirror is supported by the specification on page 20, line 14 through page 23, line 9. For example, page 20, line 33 through page 21, line 3 of the specification states "the geometry of the dome is modified so as to move top electrode 30 further away from bottom electrode 20 while keeping the spacing between top mirror 40 and bottom mirror 15 substantially the same."

Referring to claims 2 and 5, the limitation of the top electrode being further from the substrate than the top mirror from the substrate is supported by the specification on page 20, line 14 through page 23, line 9. For example, page 20, line 23 through page 21, line 3 of the specification states "the geometry of the dome is modified so as to move top electrode so as to move top electrode 30 further away from bottom electrode 20 while keeping the spacing between top mirror 40 and bottom mirror 15 substantially the same."

Referring to claims 3 and 6, the limitation of the top surface of the bottom mirror being located further from the

substrate than the top surface of the bottom electrode is supported by the specification on page 21, line 9 through page 23, line 9. For example, page 21, lines 18-21 of the specification states "the geometry of the base is modified so as to move bottom electrode 20 further away from top electrode 30 while keeping the spacing between top mirror 40 and bottom mirror 15 substantially the same."

Accordingly, claims 1-6 are believed to be in condition for allowance, and allowance thereof is respectfully requested.

In response to Item 3 above, Applicants respectfully traverse the rejection of claims 1-16 under 35 USC 103(a) as being unpatentable over Tayebati in view of Blomberg et al.

Claim 1 of the present invention comprises a tunable Fabry-Perot filter comprising a bottom mirror mounted to the top of a substrate, a bottom electrode mounted to the top of the bottom mirror, a thin membrane support atop the bottom electrode, a top electrode fixed to the underside of the thin membrane support, a reinforcer fixed to the outside perimeter of the thin membrane support, and a confocal top mirror set atop the thin membrane support, with an air cavity being formed between the bottom mirror and the top mirror, wherein the top electrode and the bottom electrode are spaced further apart from one another than the top mirror is spaced from the bottom mirror.

It is Applicants' belief that the prior art of record does not disclose a tunable Fabry-Perot filter comprising a top electrode fixed to the underside of a thin membrane support, wherein the top electrode and the bottom electrode are spaced further apart from one another than the top mirror is spaced from the bottom mirror. More particularly, Blomberg et al. is believed to teach away from the present invention in that metal contacts 12 are mounted to the topside of the upper mirror rather than to the underside of a thin membrane support. It is further believed that Blomberg et al. do not disclose a reinforcer fixed to the outside perimeter of a thin membrane support. Applicants believe Blomberg et al. teach metal contacts 12, which are not a structural reinforcer, and does not provide a thin membrane support atop the bottom electrode and a top electrode fixed to the underside of the thin membrane support. Accordingly, independent claim 1 is believed to be in condition for allowance, and allowance thereof is respectfully requested.

Claims 2 and 3, which directly depend from independent claim 1, are believed to be in condition for allowance at least for the above-identified reasons. Accordingly, allowance of claims 2 and 3 is respectfully requested.

Independent claim 4 of the present invention comprises a tunable laser comprising a bottom mirror mounted to the top of a

substrate, a gain region mounted to the top of the bottom mirror, a bottom electrode mounted to the top of the gain region, a thin membrane support atop the bottom electrode, a top electrode fixed to the underside of the thin membrane support, a reinforcer fixed to the outside perimeter of the thin membrane support, and a confocal top mirror set atop the thin membrane support, with an air cavity being formed between the bottom mirror and the top mirror, wherein the top electrode and the bottom electrode are spaced further apart from one another than the top mirror is spaced from the bottom mirror.

It is Applicants' belief that the prior art of record does not disclose a tunable laser comprising a top electrode fixed to the underside of the thin membrane support, wherein the top electrode and the bottom electrode are spaced further apart from one another than the top mirror is spaced from the bottom mirror. More particularly, Blomberg et al. is believed to teach away from the present invention in that metal contacts 12 are mounted to the topside of the upper mirror rather than to the underside of a thin membrane support. It is further believed that Blomberg et al. do not disclose a reinforcer fixed to the outside perimeter of a thin membrane support. Applicants believe Blomberg et al. teach metal contacts 12, which are not a structural reinforcer, and does not provide a thin membrane support atop the bottom

electrode and a top electrode fixed to the underside of the thin membrane support. Accordingly, independent claim 4 is believed to be in condition for allowance, and allowance thereof is respectfully requested.

Claims 5 and 6, which directly depend from independent claim 4, are believed to be in condition for allowance at least for the above-identified reasons. Accordingly, allowance of claims 5 and 6 is respectfully requested

Independent claim 7 of the present invention comprises a tunable laser comprising a bottom mirror mounted to the top of a substrate, a gain region mounted to the top of the bottom mirror, a bottom electrode mounted to the top of the gain region, a thin membrane support atop the bottom electrode, a top electrode fixed to the underside of the thin membrane support, a reinforcer fixed to the outside perimeter of the thin membrane support, and a confocal top mirror set atop the thin membrane support, with an air cavity being formed between the bottom mirror and the top mirror, wherein the top electrode and the bottom electrode extend toward one another.

It is Applicants' belief that the prior art of record does not disclose a tunable laser comprising a top electrode fixed to the underside of the thin membrane support, wherein the top electrode and the bottom electrode extend toward one another.

More particularly, Blomberg et al. is believed to teach away from the present invention in that metal contacts 12 are mounted to the topside of the upper mirror rather than to the underside of a thin membrane support. It is further believed that Blomberg et al. do not disclose a reinforcer fixed to the outside perimeter of a thin membrane support. Applicants believe Blomberg et al. teach metal contacts 12, which are not a structural reinforcer, and does not provide a thin membrane support atop the bottom electrode and a top electrode fixed to the underside of the thin membrane support. Accordingly, independent claim 7 is believed to be in condition for allowance, and allowance thereof is respectfully requested.

Claims 8-11, which depend either directly or ultimately from independent claim 7, are believed to be in condition for allowance at least for the above-identified reasons. Accordingly, allowance of claims 8-11 is respectfully requested.

Independent claim 12 comprises a tunable laser comprising a bottom mirror mounted to a substrate, a gain region mounted to the top of the bottom mirror, a bottom electrode mounted to the top of the gain region, a thin membrane support atop the bottom electrode, a top electrode fixed to the underside of the thin membrane support, a reinforcer fixed to the outside perimeter of the thin membrane support, and a confocal top mirror set atop the

thin membrane support, with an air cavity being formed between the bottom mirror and the top mirror, wherein the top electrode and the bottom electrode extend toward another.

It is Applicants' belief that the prior art of record does not disclose a tunable laser comprising a top electrode fixed to the underside of the thin membrane support, wherein the top electrode and the bottom electrode extend toward one another. More particularly, Blomberg et al. is believed to teach away from the present invention in that metal contacts 12 are mounted to the topside of the upper mirror rather than to the underside of a thin membrane support. It is further believed that Blomberg et al. do not disclose a reinforcer fixed to the outside perimeter of a thin membrane support. Applicants believe Blomberg et al. teach metal contacts 12, which are not a structural reinforcer, and does not provide a thin membrane support atop the bottom electrode and a top electrode fixed to the underside of the thin membrane support. Accordingly, independent claim 12 is believed to be in condition for allowance, and allowance thereof is respectfully requested.

Claims 13-16, which depend either directly or ultimately from independent claim 12, are believed to be in condition for allowance at least for the above-identified reasons. Accordingly, allowance of claims 13-16 is respectfully requested.

In the event that any fees may be required in this matter,
please charge the same to Deposit Account No. 16-0221.

Respectfully submitted,

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